



United States Department of the Interior

**FISH AND WILDLIFE SERVICE
Roanoke River National Wildlife Refuge
P.O. Box 430
Windsor, North Carolina 27983 252-794-3808**

December 14, 2001

Colonel James Delnoney, District Engineer Wilmington District, U.S.
Army Corps of Engineers Attention: CESA W-PM-C/Haggett
Post Office nox 1890

Wilmington, North Carolina 28402-1890

Dear Colonel Deloney:

This letter is in response to the November 26, 2001 meeting at which time all stakeholders were given an opportunity to submit their concerns with the operations of the John H. Kerr Reservoir. We recommend that the COE review and continue to consider the letter of May 1, 2000 submitted by the Raleigh Field Office (attached). In addition, we would like to outline in more detail our concerns of project impacts to the resources of the Roanoke River National Wildlife Refuge. We believe impacts to the Refuge are representative of what's occurring in the entire 130,000 acre down river coastal plain system.

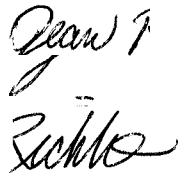
For simplicity and conciseness, we have listed a number of crucial bullets that addresses our primary concerns on releases from the John H. Kerr Reservoir.

- Prolonged flooding is the most critical factor adversely affecting the natural resources on the Refuge. We would like to see longer flows at 35,000 cfs in order to lessen flood duration on the coastal plain portion of the River. Reducing flood duration will address the following:
 - Allow US to appropriately develop compatible ecotourism activities i.e. birdwatching field trips, special hunts, wildlife festivals, educational workshops that would be beneficial to local economies.
 - Enhance neotropical bird productivity. The Refuge supports three high priority bird species as identified by the South Atlantic Coastal Plain Partners in Flight Bird Conservation Plan. They are the Swainson's warbler, Kentucky warbler and ovenbird which are all ground or near ground nesting birds directly impacted by prolonged flooding.

- We believe the integrity of the bottomland forest is being negatively impacted by prolonged flooding. Those species that cannot tolerate long periods of inundation i.e. oaks, hickories are being selected against reducing the diversity of flora and fauna of the bottomland forest community.
- Extreme erosion (undercutting, sloughing and collapse) of riverbank habitat during the nineties seemed to be occurring at an accelerated rate.
- There is anecdotal evidence of, and we suspect, interruptions to invertebrate life cycles. We believe the biomass of invertebrates is less than what it should be on the River's floodplain which in turn affects the abundance of and diversity of aquatic, mammalian and avian life found within the system.
- We believe the abundance and diversity of small mammals (i.e. shrews, voles etc.); reptiles (i.e. box turtle); and amphibians (i.e. salamanders) is being negatively impacted by prolonged flood events.

We hope that you will consider the proper studies and protocols that will address our concerns and look forward to being an integral part in representing the coastal plain system throughout this study. Any questions or comments can be directed to me or Jean Richter, Refuge Biologist. Thank you for the opportunity to provide these comments.

Sincerely,



vrJerry L. Holloman
Refuge Manager

attachment



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Raleigh Field Office

Post Office Box 33726 Raleigh, North Carolina 27636-3726

May 1, 2000

Colonel James DeLoney, District Engineer Wilmington District, U.S. Army
Corps of Engineers Attention: CESAW-PM-C/Haggett
Post Office Box 1890
Wilmington, North Carolina 28402-1890

Dear Colonel DeLoney:

The U.S. Fish and Wildlife Service (Service) has worked with your staff and other ad hoc partners to maintain, restore, and protect the biological, chemical, and physical integrity of the Roanoke River basin since the late 1930's. Although the predicted ecological and public health benefit of improved water quality was not realized from the construction and operation of the John H. Kerr Dam and Reservoir, it is laudable that the partnership has been able to moderate discharges to benefit spawning striped bass and to increase the dissolved oxygen concentrations leaving the turbines at the dam. We are particularly encouraged that the Corps has successfully obtained the approvals necessary to initiate the reconnaissance phase of a Section 216 study (of the Flood Control Act of 1970) to identify needs and opportunities to change the project and operations.

As you are aware from previous correspondence and participation in the Federal Energy Regulatory Commission's (FERC) licensing process for the Roanoke Rapids and Gaston Hydropower project, the Service has long advocated a basin-wide study of the human environment, ecological implications of the current management, and an alternatives analysis. We believe that sound and effective management of the affected public resources (ultimately the goal of the subject Section 216 study), must account for impacts over a range of spatial and temporal scales. The scope of the study must include not only the reservoir and areas downstream of the impounded area, but also affected public resources throughout the basin. To do otherwise would be a disservice to the Roanoke ecosystem and the people affected by the project. Clearly, the impacts of the Kerr dam and operations are much more widespread in time and space than simply the Kerr dam and reservoir and downstream river basin. For example, with passage, diadromous fish will re-establish to the headwaters of many major tributaries. Similarly, the effects of the currently impounded piedmont forest on migratory neotropical birds, bats, or rare plants and animals has implications for ecosystems from the Arctic to the equator. We strongly urge the Corps to ensure that the scope and scale of the environmental and economic analyses conducted during this study are correlated. It would be unreasonable to limit the investigation of environmental impacts to the area downstream of the impoundment if the investigation of economic benefits extended outside the basin. The provisions for equal consideration for the environment required

by the National Environmental Policy Act suggests that the spatial and temporal scope and scale of all study components be designed a priori, and that they provide comparable data.

The Service recommends the Corps' Section 216 study proceed down two pathways. First, a comprehensive assessment of the primary and secondary, and direct and indirect impacts of the project should be conducted. This component would completely reassess the utility of the Kerr dam and operations from a flood control, recreational/economic, and environmental perspective. We have been working with the FERC and stakeholders to identify the protocols necessary for such a "cumulative impact assessment," and have attached four working papers developed by a team of scientific experts. Our "editor's notes" suggest which studies may reasonably be the responsibility of the Corps under the current study. The teams are attempting to identify independent and dependent variables related to the environmental impacts of the dams and operations. This is intended to allow management agencies such as the Corps to conduct such studies so that we can reasonably predict the future environment with and without the project as a basis for comparison. We are also attaching our Reconnaissance Level Description for Upstream Fish Passage Alternatives for the three dams.

This comparison then provides the information necessary for the second pathway that the Section 216 study should follow: the investigation of alternatives that avoid, minimize, offset, or otherwise compensate for adverse environmental impacts. Recent judicial decisions have served to remind the Service that all decisions, including the prescription of mitigation measures, must be based on an administrative record of substantive information. The impact must be reasonably demonstrated, and the utility of the mitigation measure must be reasonably documented before the decision-making can occur.

Beginning with the Corps' 1944 reevaluation of the 1935 Section "308" study, we have suggested that water quality, particularly dissolved oxygen (DO), is an important management concern (U.S. Fish and Wildlife Service May, 1946). Recently this concern has focused on the interactions between the flood prone lands and the river channel. Based on grab samples, DO concentrations drop below the swamp water standard of 4 mg/l for significant periods of time in the lower Roanoke River and Albemarle Sound (Manooch and Rulifson 1989; Mulligan 1991; NCDEM 1992; Mulligan et al. 1993). The hypoxic events occur most frequently in late spring, summer, and early fall (Mulligan 1991) and are most frequent in the portion of the river near Plymouth, downstream of Sans Souci, and in western Albemarle Sound. Reviews state that BOD assimilative capacity in the lower river (Jamesville to the Sound) has been exhausted (Briggs 1991; Mulligan 1991; Mulligan et al. 1993).

Most available data on dissolved oxygen for the Roanoke River comes from grab samples taken during the day (Rulifson 1990; Bales 1987, 1993). However, continuous DO monitoring data are available from five USGS stations; those stations at Plymouth and Jamesville document low DO events as do reports from other researchers working in the area (Fromm and Lebo 1997; Lebo 1998). The USGS data at Plymouth indicate 21 consecutive days where daily average DO was below 5 mg/l (range between 1.0 and 4.9 mg/l) in late August and early September 1998; DMR data from the Weyerhaeuser Plymouth mill generally corroborate this.

Adverse environmental impacts of DO depletion in the Roanoke River are documented. Among other factors, low oxygen levels have been implicated in the decline of the Albemarle/Roanoke River stock of striped bass (U.S. Fish and Wildlife Service 1992). A July 28-August 2, 1995 fish kill in the Roanoke River, documented to be caused by hypoxic conditions, resulted in a conservatively estimated mortality of 25,000 fish, including 9,350 striped bass (J. Kornegay, North Carolina Wildlife Resources Commission, pers. comm. 1996).

Sources which act in concert to produce hypoxic conditions include anthropogenic inputs of oxygen consuming waste from municipal and industrial wastewater treatment plants, discharge of waters from riparian wetlands or backswamps, hypolimnetic reservoir discharges and managed flow regimes (Rulifson et al. 1990). Flows in the Roanoke River downstream of Weldon are highly regulated by a number of reservoirs upstream. The most important of these reservoirs in terms of flow is the Corps of Engineers' Kerr Reservoir which controls flows into Roanoke Rapids and Lake Gaston reservoirs downstream. Kerr reservoir provides approximately 87 percent of the flow to the lower river (Rulifson et al. 1990; Fromm and Lebo 1997). Between Roanoke Rapids and Pollocks Ferry 22 miles downstream, the Roanoke River's water quality is largely influenced by reservoir releases; the extent of dissolved oxygen response further downstream is not well understood (Rulifson et al. 1990).

We encourage the Corps to address the effects of reservoir water quality and reservoir management on the quality of waters in the Roanoke River downstream as well as its riparian wetlands. The Service has invested heavily in DO monitoring to address some potential sources of DO depletion, and we urge your agency to help address this issue in the context of the 216 study. We would be pleased to discuss potential study designs, share the references cited here, and provide the continuous DO data for the lower river.

The Service is obligated to protect the ecological integrity of the Roanoke River National Wildlife Refuge per the National Wildlife Refuge System Improvement Act of 1997. While the statute does not confer the same mandatory obligation on the District Engineer, we encourage the Corps to collaborate with us to meet our mandate. The evidence available to us suggests that the current controlled flooding operational protocols and sediment trapping at the dams are significantly altering the state of the downstream environments, including refuge lands and resources. We believe that one of the most significant components of the Section 216 study will involve the impacts of structural flood control on the areas downstream of Kerr dam. We are hindered in our ability to meet our statutory obligations because we do not possess adequate information about the impacts of the operations and structures of Kerr dam on the biological diversity of historic, current, and potential future environments, their functions and dynamics, and their interconnectedness. If the Section 216 study could encompass a four-dimensional (upstream - downstream, vertical, lateral, and temporal) evaluation of the river and its' environment that extended beyond the limited scope identified in the March 13, 2000, letter, many of those inadequacies would be reduced or eliminated.

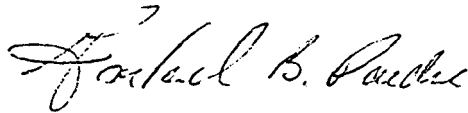
We encourage the District Engineers' support for an Adaptive Management approach to managing the Roanoke River basin. It is probably the most reasonable mechanism for addressing the uncertainties associated with dynamic environments in a complex system with multiple jurisdictions (Peterson et al. 1997; Johnson 1999). In our opinion, Adaptive Management requires at least a basinwide scope for data collection and monitoring. Adaptive management is management-by-hypothesis. The scientific credibility of Adaptive Management is hindered without adequate baseline data, rationally selected monitoring criteria and protocols for altering the management hypothesis. We believe that implementation of an Adaptive Management mechanism supports a more comprehensive Section 216 study than described in the March 13, 2000, letter.

Aside from the current reconnaissance study, two outstanding opportunities exist to assist in ongoing and imminent information collection efforts. We suggest the District Engineer consider immediate support for the ongoing stream and floodplain and water quality gaging network below the Roanoke Rapids dam, and offer assistance to the University of North Carolina at Chapel Hill's proposed archeology field site in Halifax. Support for these two efforts will extent the Services' limited financial assistance and will provide information critical to the success of the Section 216 study.

The Service appreciates this opportunity to participate in the subject Section 216 study. We believe it can allow stakeholders to manage the basin and its' resources in a comprehensive manner. This new

beginning is sure to benefit current and future generations of North Carolinians, Virginians, and all Americans. Please call Kevin Moody of my staff at 919/8564520 extension 19, Jerry Holloman, Refuge Manager at the Roanoke River National Wildlife Refuge at 252/794-3808, or Wilson Laney at the South Atlantic Fisheries Resources Coordination Office at 919/515-5019 if you have any questions or comments.

Sincerely,



Garland B. Pardue

Ecological Services Supervisor

attachments (6)
cc:

The Nature Conservancy (Pearsall) Virginia Power (Baker)
Harza Engineering (Dyok)

Natural Heritage Institute (Roos-Collins) WRC, Raleigh, NC (McBride, Cobb) DCM,
Raleigh, NC (Benton)
DENR, Raleigh, NC (Holman)

Office of the Attorney General (Bernstein) DWR, Raleigh, NC (Morris)

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